



# Massachusetts Department of Environmental Protection Source Water Assessment and Protection (SWAP) Report For Plymouth South Elementary School

## What is SWAP?

The Source Water Assessment and Protection (SWAP) program, established under the federal Safe Drinking Water Act, requires every state to:

- ? Inventory land uses within the recharge areas of all public water supply sources;
- ? Assess the susceptibility of drinking water sources to contamination from these land uses; and
- ? Publicize the results to provide support for improved protection.

## SWAP and Water Quality

Susceptibility of a drinking water source does *not* imply poor water quality. Actual water quality is best reflected by the results of regular water tests.

Water suppliers protect drinking water by monitoring for more than 100 chemicals, treating water supplies, and using source protection measures to ensure that safe water is delivered to the tap.

Prepared by the  
Massachusetts Department of  
Environmental Protection,  
Bureau of Resource Protection,  
Drinking Water Program

Date Prepared:  
June 2004

**Table 1: Public Water System (PWS) Information**

<b>PWS NAME</b>	Plymouth South Elementary School
<b>PWS Address</b>	490 Long Pond Road
<b>City/Town</b>	Plymouth, Massachusetts 02360
<b>PWS ID Number</b>	4239017
<b>Local Contact</b>	Steven Nelson
<b>Phone Number</b>	(508) 224-4416

<b>Well Name</b>	<b>Source ID#</b>	<b>Zone I (in feet)</b>	<b>IWPA (in feet)</b>	<b>Source Susceptibility</b>
Well #1	01G	221	542	Moderate

## Introduction

We are all concerned about the quality of the water we drink. Drinking water wells may be threatened by many potential sources of contamination, including septic systems, road salting, and improper disposal of hazardous materials. Citizens and local officials can work together to better protect these drinking water sources.

### Purpose of this report:

This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential sources of contamination the assessment helps focus protection efforts on appropriate best management practices (BMPs) and drinking water source protection measures. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

### This report includes:

1. Description of the Water System
2. Discussion of Land Uses within Protection Areas
3. Recommendations for Protection
4. Attachments, including a Map of the Protection Areas

## 1. Description of the Water System

The well for the Plymouth South Elementary School is located adjacent to the school. The well has a Zone I of 221 feet and an Interim Wellhead Protection Area (IWPA) of 542 feet. The IWPA provides an interim protection area for a water supply well when the actual recharge area has not been delineated. The actual recharge area to the well may be significantly larger or smaller than the IWPA. The well is located in an aquifer with a high vulnerability to contamination due to the absence of hydrogeologic barriers that can prevent contaminant migration. Please refer to the attached map of the Zone I and IWPA. The well serving the School is treated with sodium hydroxide to raise the pH for corrosion control purposes. The DEP requires public water suppliers to monitor the

### What is a Protection Area?

A well's water supply protection area is the land around the well where protection activities should be focused. Each well has a Zone I protective radius and an Interim Wellhead Protection Area (IWPA).

- **The Zone I** is the area that should be owned or controlled by the water supplier and limited to water supply activities.
- **The IWPA** is the larger area that is likely to contribute water to the well.

In many instances the IWPA does not include the entire land area that could contribute water to the well. Therefore, the well may be susceptible to contamination from activities outside of the IWPA that are not identified in this report.

### What is Susceptibility?

Susceptibility is a measure of a well's potential to become contaminated due to land uses and activities within the Zone I and Interim Wellhead Protection Area (IWPA).

quality of the water. For current information on monitoring results and treatment, please contact the Public Water System contact person listed above in Table 1. Drinking water monitoring reporting data is also available on the web via EPA's Envirofacts website at [http://www.epa.gov/enviro/html/sdwis/sdwis\\_query.html](http://www.epa.gov/enviro/html/sdwis/sdwis_query.html).

## 2. Discussion of Land Uses in the Protection Areas

There are a number of land uses and activities within the drinking water supply protection areas that are potential sources of contamination.

#### Key issues include:

1. **non-water supply activities in Zone I;**
2. **septic system;**
3. **school; and**
4. **parking and access roads.**

The overall ranking of susceptibility to contamination for the well is moderate, based on the presence of moderate ranked threats within your water supply protection area.

1. **Zone I** – Currently, the well does not meet DEP's Zone I regulations, which allow only water supply related activities in the Zone I and require that the land within the Zone I be owned or controlled by the public water system. The school's Zone I contains part of the school building, parking area and access roads. The public water supplier does own all the land encompassed by the Zone I. Please note that systems not meeting DEP Zone I requirements must get DEP approval and address Zone I issues prior to increasing water use or modifying systems.

#### Recommendations:

- ✓ Do not use or store pesticides, fertilizers or road salt within the Zone I.
- ✓ Direct stormwater drainage away from Zone I.

2. **Septic System** – The septic system for the school is located within the IWPA.

#### Recommendation:

- ✓ Never dispose of hazardous materials or wastes down the drain.
- ✓ Septic system components should be inspected and maintained on a regular basis.

3. **School** – Activities associated with schools commonly involve hazardous materials

**Table 2: Table of Activities within the Water Supply Protection Areas**

Potential Contaminant Sources	Zone I	IWPA	Threat	Potential Concern
school	Yes	Yes	Moderate	solvents & other materials used in classrooms
lawn/playground	Yes	Yes	Moderate	fertilizer and pesticide use
parking lot and access roads	Yes	Yes	Moderate	stormwater runoff, spills
septic system	No	Yes	Moderate	bacteria, improper disposal of hazardous materials

\* For more information on Contaminants of Concern associated with individual facility types and land uses please see the SWAP Draft Land Use / Associated Contaminants Matrix on DEP's website - [www.state.ma.us/dep/brp/dws/](http://www.state.ma.us/dep/brp/dws/).

## Glossary

**Zone I:** The area closest to a well; a 100 to 400 foot radius proportional to the well's pumping rate. To determine your Zone I radius, refer to the attached map.

**IWPA:** A 400 foot to ½ mile radius around a public water supply well proportional to its pumping rate; the area DEP recommends for protection in the absence of a defined Zone I. To determine IWPA radius, refer to the attached map.

**Zone II:** The primary recharge area defined by a hydrogeologic study.

**Aquifer:** An underground water-bearing layer of permeable material that will yield water in a usable quantity to a well.

**Hydrogeologic Barrier:** An underground layer of impermeable material that resists penetration by water.

**Recharge Area:** The surface area that contributes water to a well.

such as fuel oil, laboratory, art, photographic, machine shop, landscaping, and cleaning chemicals. These hazardous materials have the potential to impact drinking water supplies if they are improperly handled, stored, or materials are improperly disposed of.

### Recommendation:

- ✓ Never dispose of hazardous materials down the drain.
- ✓ Develop an Integrated Pest Management (IPM) Plan for landscaping and lawn care, more information is available at <http://www.state.ma.us/dfa/pesticides/ipm/>
- ✓ Ensure that hazardous material storage, use and disposal are all performed in accordance with state and local regulations and in a manner that prevents groundwater contamination.

**4. Parking and Roads** – Vehicle parking and access roads are within the Zone I and IWPA. Runoff and spills from roads can contaminate public wells.

### Recommendation:

- ✓ Map stormwater drainage and direct away from the Zone I area
- ✓ Continue to maintain contact with the Fire Department about spills.

Implementing the following recommendations will reduce the system's susceptibility to contamination.

## 3. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will reduce the well's susceptibility to contamination. School officials should review and adopt the key recommendations above and the following:

### Priority Recommendations:

#### Zone I:

- ✓ Keep additional non-water supply activities out of the Zone I.
- ✓ When possible, remove all non-water supply activities from the Zone I to comply with DEP's Zone I requirements.
- ✓ Consider well relocation if Zone I threats cannot be mitigated.
- ✓ Post water supply protections signs in the Zone I and IWPA.

- ✓ Prohibit public access to the well and pumphouse by locking facilities.
- ✓ Conduct regular inspections of the Zone I. Look for illegal dumping or evidence of vandalism.
- ✓ Use Best Management Practices (BMPs) and restrict activities that could pose a threat to the water supply.
- ✓ Keep road and parking lot drainage away from the well.
- ✓ Do not use or store pesticides, fertilizers or road salt within the Zone I.

### Training and Education:

- ✓ Train staff on proper hazardous material use, disposal, emergency response, and best management practices; include custodial staff, groundskeepers, certified operator, and food preparation staff. Post labels as appropriate on raw materials and hazardous waste.
- ✓ Post drinking water protection area signs at key visibility locations.
- ✓ Incorporate groundwater education into school curriculum

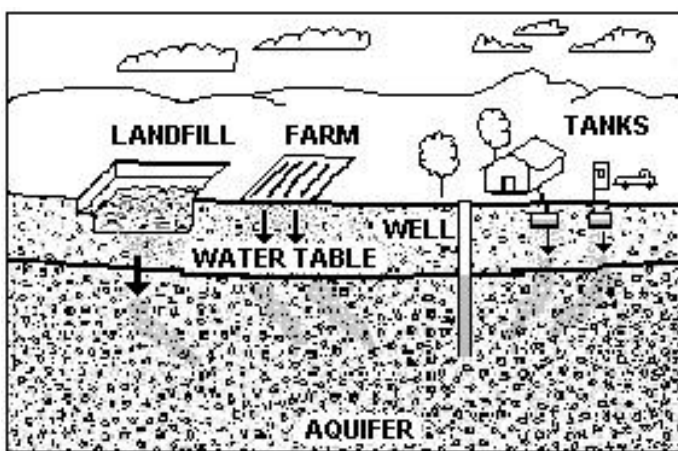


Figure 1: Example of how a well could become contaminated by different land uses and activities.

### For More Information:

Contact Isabel Collins in DEP's Lakeville Office at (508)94622726 for more information and for assistance in improving current protection measures.

More information relating to drinking water and source protection is available on the Drinking Water Program web site at:

[www.state.ma.us/dep/brp/dws/](http://www.state.ma.us/dep/brp/dws/)

### Additional Documents:

To help with source protection efforts, more information is available by request or online at [www.state.ma.us/dep/brp/dws/](http://www.state.ma.us/dep/brp/dws/), including:

1. Water Supply Protection Guidance Materials such as model regulations, Best Management Practice information, and general water supply protection information.
2. MA DEP SWAP Strategy
3. Land Use Pollution Potential Matrix
4. Draft Land/Associated Contaminants Matrix

Copies of this assessment have been made available to the public water supplier and town boards.

(K-6 and 7-12 curricula available; contact DEP for copies).

- ✓ Work with your community to ensure that stormwater runoff at the road is directed away from the well and is treated according to DEP guidance.

### Facilities Management:

- ✓ Septic system components should be located, inspected, and maintained on a regular basis.

### Planning:

- ✓ Work with local officials in town to include the facility's IWPA in the Aquifer Protection District Bylaw and to assist you in improving protection.
- ✓ Supplement the SWAP assessment with additional local information and incorporate it into water supply educational efforts. Use a land use inventory to assist in setting priorities, focusing inspections, and creating educational activities.

### Funding:

The Department's Wellhead Protection Grant Program provides funds to assist public water suppliers in addressing wellhead protection through local projects. Protection recommendations discussed in this document may be eligible for funding under that program. For additional information, please refer to DEP's web site. Other funding opportunities are described in *Grant and Loan Programs: Opportunities for Watershed Protection, Planning and Implementation* at <http://www.state.ma.us/dep/brp/mf/files/glprgm.pdf>.

Citizens and community officials should use this SWAP report to spur discussion of local drinking water protection measures.

## 5. Attachments

- Map of the Public Water Supply (PWS) Protection Area.
- Recommended Source Protection Measures Fact Sheet
- Your Septic System Brochure
- Industrial Floor Drains Brochure
- Healthy Schools Fact Sheet
- Source Protection Sign Order Form